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# PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)  
(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference S-16	FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/JP2005/004393	International filing date (day/month/year) 08.03.2005	Priority date (day/month/year) 09.03.2004
International Patent Classification (IPC) or national classification and IPC Int.Cl. F28F1/02 (2006.01), B21D53/04 (2006.01)		
Applicant SHOWA DENKO K.K.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:

a. ☐ a total of \_\_\_\_\_ sheets, as follows:

☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- |                                     |              |   |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report   |
| <input type="checkbox"/>            | Box No. II   | Priority  |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application   |

Date of submission of the demand 05.09.2005	Date of completion of this report 01.02.2006
Name and mailing address of the IPEA/JP  <b>Japan Patent Office</b> 3-4-3, Kasumigaseki, Chiyoda-ku, Tokyo 100-8915, Japan	Authorized officer <b>SHOJI Hidefumi</b> Telephone No. +81-3-3581-1101 Ext. 3377

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2005/004393

Box No. I

Basis of the report

1. With regard to the language, this report is based on:

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

- ☒ the international application as originally filed/furnished
- ☐ the description:
- pages \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:
- Nos. \_\_\_\_\_ as originally filed/furnished
- Nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- Nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- Nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- sheets/figs \_\_\_\_\_ as originally filed/furnished
- sheets/figs \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets/figs \* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2005/004393

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	1-26	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-26	NO
Industrial applicability (IA)	Claims	1-26	YES
	Claims		NO

## 2. Citations and explanations(Rule 70.7)

## Document 1

JP 2003-053460A(SHOWA DENKO K.K.)2003.02.26,  
line 48,column 11,page 7 to line 44,column 13,page 8,Figs 1 to 3  
& US 2004/0244196 A1 & EP 001420910 A1 & WO 2002/100567 A1 & TW 000557235  
B & CZ 020040024 A

## Document 2

JP 2000-193387A(SHOWA ALUMINUM Co., Ltd.)2000.  
07.14,lines 9-13,column 2,page 2,line 49,column 6,page 4 to line  
11,column 7,page 5,lines 33-45,column 8,page 5,lines 16-24,column  
10,page 6,Figs 1 to 3 (Family: none)

## Document 3

JP 08-042985A(SHOWA ALUMINUM Co., Ltd.)1996.  
02.16,lines 23-47,column 6,page 4,Fig 12 (Family: none)

The subject matters of claim 1-2 do not appear to involve inventive steps in view of the document 1 cited in the ISR and the document 2 cited in the same. The technical feature [the reinforcing wall forming portions 14 and 15 of a flat tube 1] in D1 and the feature [the reinforcing wall forming portions 11 and the ridges 24,24] in D2 are concerned with mutually related technical fields. A skilled person in the art would easily conceive the idea of employing the feature in D1 to substitute the feature disclosed in D2.

The subject matter of claim 3 does not involve an inventive step over D1,D2 and the document 3 cited in the ISR. The technical feature [each of the flat wall forming portions is provided with reinforcing walls forming portions arranged alternately] is disclosed in D3(see Fig. 12).

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: V

The subject matters of claim 4-7 do not involve inventive steps over D1, D2. A skilled person would therefore regard it as a normal option to include the feature [the thickness of the reinforcing walls] in order to solve the problem.

The subject matter of claim 8 does not involve an inventive step over D1, D2. The technical feature [opposite side faces of the thin reinforcing wall forming portion are positioned inwardly of opposite side faces of the thick reinforcing wall forming portion] is disclosed in D2.

The subject matters of claim 9-12 do not involve inventive steps over D1, D2. The technical feature [a flat tube that the ridge 18 is formed on an end face of the thin reinforcing wall forming portion 14, and the groove 19 is formed in an end face of the thick reinforcing wall forming portion 15] is disclosed in D1.

The subject matters of claim 13, 15 and 18 do not involve inventive steps over D1, D2. The technical feature [a flat tube 1 fabricated according to claim 13, 15, 18] is disclosed in D1.

The subject matters of claim 14 and 16 do not involve inventive steps over D1, D2. A skilled person would therefore regard it as a normal option to include the feature [the fillet of the specified spot] in order to solve the problem.

The subject matter of claim 17 does not involve an inventive step over D1, D2. The technical feature [a heat exchanger comprising according to claim 17] is disclosed in D1.

The subject matters of claim 19-26 do not involve inventive steps over D1, D2. The technical feature [a condenser, an evaporator, etc. with a heat exchanger comprising a flat tube] is well-known (for example lines 9-13, column 2, page 2 in D2).